

### **REMARKS/ARGUMENTS**

Claims 1 and 2 are all the claims pending in this application.

Reconsideration of the subject patent application and allowance of the claims are respectfully requested in view of the following remarks.

#### **Information Disclosure Statement**

The Patent Office did not consider the foreign patent document cited in the Information Disclosure Statement ("IDS") filed November 18, 2003. In particular, the Patent Office avers that the IDS does not comply with 37 C.F.R. § 1.98(a)(2), and that a copy of the document is required. However, 37 C.F.R. § 1.98(d)(2) states that a copy of any publication listed in an IDS must be provided unless the IDS submitted in the earlier application complies with 37 C.F.R. § 1.98(a)-(c).

In this case, the foreign patent document was cited in an IDS, which was submitted in U.S. Serial Number 10/024,475 –the parent application– along with a legible copy. A statement of the relevance of the document, e.g., "cited in an Office Action issued by the Korean Patent Office during examination of the corresponding Korean application," was also provided in the earlier submitted IDS.

Accordingly, the IDS does comply with 37 C.F.R. § 1.98, and Applicant respectfully requests that the Patent Office consider the foreign patent document, and initial and sign the IDS filed on November 18, 2003.

#### **Prior Art Rejection - 35 U.S.C. § 103(a)**

Claims 1 and 2 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chesebro et al. (U.S. Patent No. 4,519,128) ("Chesebro") in view of MacDonald et al. (U.S. Patent No. 5,770,465) ("MacDonald"). In particular, the Patent Office asserts that Chesebro discloses the claimed invention of claim 1 with the exception of a trench depth of 50-150  $\mu\text{m}$ . The Patent Office relies on MacDonald to

remedy the deficiencies of Chesebro, and asserts that "it would have been obvious ... to modify the device of Chesebro by incorporating a trench with a depth of 100 micrometers to act as a high aspect beam as taught by MacDonald." Applicant disagrees for the following reasons.

To establish a prima facie case of obviousness, the Patent Office must demonstrate: (1) a suggestion or motivation to combine reference teachings, (2) that there was a reasonable expectation of success, and (3) that prior art reference or references teach or suggest all claim limitations. In re Vaeck, 947 F.2d. 488, 493, 20 USPQ2d. 1438 (Fed. Cir. 1991), see, e.g., MPEP § 2142, at 2100-128 (Rev. 2, May 2004). Motivation to combine references can come from "the nature of the problem to be solved, the teachings of the prior art, [or] knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1358, 47 USPQ2d 1453 (Fed. Cir. 1998). The §103(a) rejection is improper because it fails to establish a prima facie case of obviousness in that the Chesebro and MacDonald references do not teach or suggest all the elements of claims 1 and 2; moreover, there is no motivation or suggestion to modify the cited references in the manner suggested by the Patent Office.

#### 1. Failure to Teach Features Recited in the Claims

Independent claim 1 recites, inter alia, "a base area ... having a trench which penetrates the low concentration collector area in a vertical direction at a junction termination." Chesebro fails to disclose, teach or suggest this feature.

The trench of Chesebro penetrates the N<sup>+</sup> subcollector diffusion region (N<sup>+</sup>, 12) and exposes the P substrate. In contrast, the trench of the present invention, as set forth in claim 1, penetrates the low concentration collector area 210 and exposes the upper end of the high concentration collector area 200.

MacDonald fails to remedy this deficiency. MacDonald does not disclose a trench that penetrates a low concentration collector area in a vertical direction at a junction termination.

Dependent claim 2 depends from independent claim 1 and should be allowed for at least the same reasons discussed above with respect to claim 1.

## 2. Flawed Motivation to Combine

The combined disclosures of Chesebro and MacDonald do not render the pending claims obvious because there is no motivation, absent the hindsight reconstruction of the present invention, to modify the disclosure of Chesebro in accordance with the disclosure of MacDonald.

Column 6, lines 20-30 of MacDonald recites that:

FIGS. 3a-h depict, in cross-section, process steps for forming SOG trench filling mask structures at a level below the top surface of a substrate. The process steps are generally similar to those described previously with respect to FIGS. 1 and 2. The *resulting filled trenches* 72, 74 and 76 serve as masks during subsequent etch steps to be described later. These *filled trenches* become either tall, *released beam structures* in their own right, or *serve as masks during additional deep etching* into the base silicon substrate *to form high aspect ratio beams*. Again, these processes will be described later. Emphasis added.

The spin-on-glass (SOG) filled trenches of MacDonald serve as beam structures or masks during additional deep etching, thereby forming high aspect ratio beams. In other words, the filled trenches of MacDonald serve as beam structures to support the microstructure when additional deep etching is required. However, in the Chesebro reference, no "additional deep etching" is performed and, thus, there is absolutely no need for a filled, high aspect ratio beam. Further, preventive maintenance for incidents relating to deep etching is not a problem to be solved in the present invention.

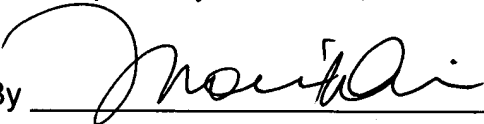
Accordingly, it would not have been obvious to a skilled artisan to modify Chesebro to include the filled, high aspect ratio beams of MacDonald. Clearly, the Patent Office has merely speculated and the proposed modification is no more than a hindsight reliance on the teachings in the present application of the advantages of the present invention. The combination of Chesebro and MacDonald is improper as being impermissibly

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motivated in hindsight by the teachings of the present application. Thus, the §103(a) rejection of claims 1 and 2 should be withdrawn.

Applicant submits that the present application is now in condition for allowance. Reconsideration and favorable action are earnestly requested.

Respectfully submitted,

By 

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